CLAIMS

1. A method for treating the surface of a silicone medical device comprising:

(a) forming a medical device from a silicone material, wherein the silicone material comprises monomeric units having reactive functionalities selected from the group consisting of azlactone, carboxylic acid, amine, hydroxy and epoxy functionalities, and combinations thereof; and

(b) forming a hydrophilic reactive polymer having complementary reactive functionalities along the polymer chain selected from the group comprising azlactone, isocyanate, acid anhydride, epoxy, hydroxy, primary or secondary amine, or carboxylic acid functionalities, and combinations thereof, wherein in the case of the hydroxy or amine complementary reactive functionalities, the silicone material comprises azlactone reactive functionalities and in the case of the carboxylic acid complementary functionality, the silicone material comprises epoxy reactive functionalities;

(c) reacting the hydrophilic reactive polymer of (b) having complementary reactive functionalities along the polymer chain with said reactive functionalities on or near the surface of the medical device of (a), thus forming a biocompatible surface on the medical device.

2. The method of claim 1, wherein the medical device is a silicone contact lens or intraocular lens and the coating is uncolored.

3. The method of claim 1, wherein the medical device is a silicone hydrogel, continuous-wear contact lens.

4. The method of claim 1, wherein the hydrophilic reactive polymer comprises 1 to 100 mole percent of monomeric units having said reactive functionalities.

5. The method of claim 1, wherein the hydrophilic reactive polymer comprises 0 to 99 mole percent of monomeric units that are derived from non-reactive hydrophilic monomers.

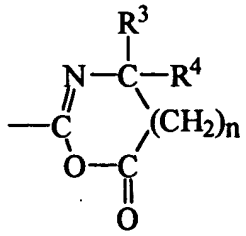
6. The method of claim 1, wherein the polymer comprises 50 to 95 mole percent of monomeric units derived from non-reactive hydrophilic monomers selected from the group consisting of acrylamides, lactones, poly(alkyleneoxy)methacrylates, methacrylic acid or hydroxyalkyl methacrylates and 5 to 50 percent of monomeric units derived from functionally reactive monomers selected from the group consisting of epoxy, azlactone, and anhydride containing monomers, wherein the alkyl or alkylene groups have 1 to 6 carbon atoms.

7. The method of claim 7, wherein the functionally reactive monomers are selected from the group consisting of glycidyl methacrylate, maleic anhydride, itaconic anhydride, and isocyanomethacrylate.

8. The method of claim 1, wherein the hydrophilic monomers are selected from the group consisting of dimethylacrylamide, acrylamide, and N-vinyl pyrrolidinone.

9. The method of claim 1, wherein the hydrophilic reactive polymer comprises 0 to 35 mole percent monomeric units derived from hydrophobic monomers.

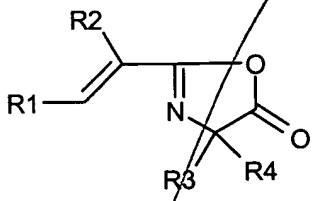
10. The method of claim 1, wherein the hydrophilic polymer comprises oxazolinone moieties having the following formula:



wherein $R^3$ and $R^4$ independently can be an alkyl group having 1 to 14 carbon atoms; a

cycloalkyl group having 3 to 14 carbon atoms; an aryl group having 5 to 12 ring atoms; an arenyl group having 6 to 26 carbon atoms; and 0 to 3 heteroatoms selected from S, N, and nonperoxidic 0; or $R^3$ and $R^4$ taken together with the carbon to which they are joined can form a carbocyclic ring containing 4 to 12 ring atoms, and n is an integer 0 or 1.

11. The method of claim 10, wherein the polymer comprises the reaction product of a mixture of monomers comprising the monomer represented by the general formula:




where $R^1$ and $R^2$ independently denote a hydrogen atom or a lower alkyl radical with one to six carbon atoms, and $R^3$ and $R^4$ independently denote alkyl radicals with one to six carbon atoms or a cycloalkyl radicals with 5 or 6 carbon atoms.

12. The method of claim 11, wherein the monomer is selected from the group consisting of 2-vinyl-4,4-dimethyl-2-oxazolin-5-one; 2-isopropenyl-4,4-dimethyl-2-oxazolin-5-one; 2-isopropenyl-4 ,4-dimethyl-2-oxazolin-5-one; and 2-vinyl-4,4-dimethyl-2-oxazol in-5-one.

13. The method of claim 10, wherein the medical device is dipped in a solution comprising at least one hydrophilic reactive polymer in the absence of a coloring substance.

14. A silicone medical device including a hydrophilic surface comprising:

a medical device made from a silicone material, wherein the silicone material comprises monomeric units having reactive functionalities selected from the group consisting of azlactone, carboxylic acid, amine, hydroxy, and epoxy functionalities, and compatible combinations thereof; and hydrophilic polymers attached

to the medical device wherein the points of attachment are the result of the reaction of isocyanate, hydroxy, amine, carboxylic acid, or ring-opening complementary reactive functionalities or compatible combinations thereof in monomeric units along the hydrophilic reactive polymers with said functionalities on or near the surface of the medical device or the results, wherein in the in the case of the hydroxy or amine complementary reactive functionalities, the silicone material comprises azlactone reactive functionalities and in the case of the carboxylic acid complementary functionality, the silicone material comprises epoxy reactive functionalities, thereby producing a clear, transparent biocompatiyle coating.

15. The medical device of claim 14, wherein the medical device is a silicone contact lens or intraocular device.

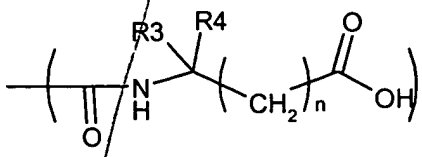
16. The medical device of claim 14, wherein the medical device is a silicone hydrogel continuous-wear lens.

17. The medical device of claim 14, wherein the hydrophilic polymers comprise 1 to 100 mole percent of monomeric units having said reactive functionalities and 0 to 99 mole percent of monomeric units that are derived from non-reactive hydrophilic monomers.

18. The medical device of claim 14, wherein the reactive functionalities are derived from monomers containing one or more of the following groups: glycidyl, azlactone, isocyanate, and acid anhydride.

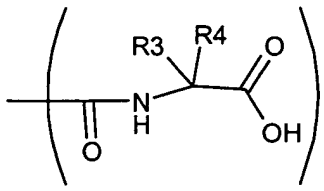
19. The medical device of claim 14, wherein the hydrophilic monomeric units are derived from monomers selected from the group consisting of acrylamides, lactams, poly(alkyleneoxy)methacrylates, methacrylic acid or hydroxyalkyl methacrylates .

20. The medical device of claim 14, wherein the hydrophilic polymer comprises moieties along the chain having the following formula:




wherein $R^3$ and $R^4$ independently can be an alkyl group having 1 to 14 carbon atoms; a cycloalkyl group having 3 to 14 carbon atoms; an aryl group having 5 to 12 ring atoms; an arenyl group having 6 to 26 carbon atoms; and 0 to 3 heteroatoms selected from S, N, and nonperoxidic 0; or $R^1$ and $R^2$ taken together with the carbon to which they are joined can form a carbocyclic ring containing 4 to 12 ring atoms, and n is an integer 0 or 1.

21. The medical device claim 14, wherein the hydrophilic polymer comprises moieties along the chain represented by the general formula:




where $R^3$ and $R^4$ independently denote a hydrogen atom or a lower alkyl radical with one to six carbon atoms, and $R^3$ and $R^4$ independently denote alkyl radicals with one to six carbon atoms or a cycloalkyl radicals with 5 or 6 carbon atoms.

22. The medical device claim 14, wherein hydrophilic polymer chains attached to the carbonaceous layer are the result of the reaction of a mixture of polymers comprising (a) a first hydrophilic reactive polymer having reactive functionalities in monomeric units along the hydrophilic polymers complementary to reactive functionalities on the surface of the medical device and, in addition, (b) a second

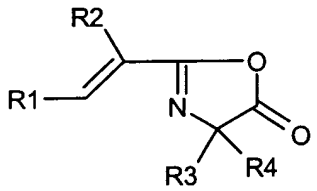
hydrophilic reactive polymer having supplemental reactive functionalities that are reactive with the first hydrophilic reactive polymer.

23. The medical device of claim 22, wherein the first hydrophilic reactive polymer is an epoxy-functional polymer and the second hydrophilic reactive polymer is an acid-functional polymer, either simultaneously or sequentially applied to the substrate to be coated.

24. The medical device of claim 14, wherein the substrate comprises a coating comprising the reaction product of a separate epoxy-functional hydrophilic reactive polymer and an acid-functional hydrophilic polymer.

25. The medical device of claim 14, wherein the substrate comprises azlactone-functional monomeric units that have been coverted to acid groups near or on the surface.

26. A copolymer comprising 1 to 99 mole percent of a monomeric unit derived from monomers selected from the group consisting of acrylamides, lactams and poly(alkylene oxides), hydroxyalkyl methacrylates, wherein the alkylene or alkyl groups have 1 to 6 carbon atoms, and 1 to 99 mole percent of a monomer selected from the group consisting of the formula:



where $R^1$ and $R^2$ independently denote a hydrogen atom or a lower alkyl radical with one to six carbon atoms, and $R^3$ and $R^4$ independently denote alkyl radicals with one to six carbon atoms or a cycloalkyl radicals with 5 or 6 carbon atoms.

27. A method for treating the surface of a silicone medical device comprising:

(a) forming a medical device from a silicone material, wherein the silicone material comprises monomeric units having reactive functionalities selected from the group consisting of azlactone, carboxylic acid, amine, hydroxy and epoxy functionalities, and combinations thereof and;

(b) forming a hydrophilic reactive polymer having complementary reactive functionalities along the polymer chain which functionalities are selected from the group comprising azlactone, isocyanate, acid anhydride, epoxy, amine, carboxylic acid, and acid functionalities or compatible combinations thereof, which hydrophilic reactive polymer comprises 5 to 50 percent of monomeric units derived from functionally reactive monomers selected from the group consisting of isocyanate, epoxy, azlactone, anhydride containing monomers, and combinations thereof, and 0.5 to 20 percent of monomeric units derived from hydrophobic monomers, wherein in the case of the hydroxy or amine complementary reactive functionalities, the silicone material comprises azlactone reactive functionalities and in the case of the carboxylic acid complementary functionality, the silicone material comprises epoxy reactive functionalities;

(c) reacting the hydrophilic reactive polymer of (b) having complementary reactive functionalities along the polymer chain with said reactive functionalities on or near the surface of the medical device of (a) in the absence of a coloring substance, thus forming a biocompatible surface on the medical device.

28. The method of claim 26, wherein the hydrophilic reactive polymer further comprises 50 to 95 mole percent of monomeric units derived from non-reactive hydrophilic monomers selected from the group consisting of acrylamides, lactones, poly(alkyleneoxy)methacrylates, methacrylic acid or hydroxyalkyl methacrylates,